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Original Research Paper

Framing low-carbon pathways: A discursive analysis of contending storylines surrounding the phase-out of coal-fired power in Ontario

Daniel Rosenbloom

School of Public Policy and Administration, Carleton University, 1125 Colonel By Drive, Ottawa, K1S 5B6, ON, Canada

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ABSTRACT

Transition studies have made constructive efforts to attend more closely to the politics of sustainability transitions, with discourse emerging as an increasingly important means of interrogating these dynamics. Drawing on discourse perspectives, this study deploys the multi-dimensional discursive approach to explore framing struggles surrounding a climate change mitigation experience of international significance (the phase-out of coal-fired power in Ontario), revealing how ideas, interests, institutions, and infrastructure (the four I's of sustainable energy transitions) interact in constituting pathways to sustainability. This approach captures the way in which contending actors frame issues and technologies, modulating possibilities and shaping the sequences of choices that link current societal arrangements to future low-carbon states. The study elaborates how processes of negotiation among competing interests and priorities helped define the pathway to eliminate coal. It also suggests that regulatory measures may help to accelerate the pace of transitions and succeed where market approaches are politically untenable.

1. Introduction

In the inaugural issue of this journal, Meadowcroft (2011) echoed the call to develop more politically-sensitive understandings of sustainability transitions (Meadowcroft, 2009; Shove and Walker, 2007; Smith et al., 2010, 2005; among others), pointing to the importance of interactions among *interests* (strategies and positions of political actors), *institutions* (layered norms, practices, and relations of power), and *ideas* (frames of reference that shape problem definitions and solution spaces). Since then, transition research has constructively responded to this challenge, with multiple contributions elaborating the role of ideas, interests, and institutions in shaping transformative possibilities. Of particular interest for this discussion, transition studies have begun to more deeply examine the role of discourse in: (1) framing technologies (Bosman et al., 2014; Geels and Verhees, 2011; Rosenbloom et al., 2016), (2) reinforcing or undermining institutional arrangements (Fuenfschilling and Truffer, 2016), (3) modulating the development of protected spaces for innovations (Raven et al., 2016; Smith et al., 2014), and (4) influencing the choices that define pathways to sustainability (Rosenbloom et al., 2018; Stirling, 2014). At base, discursive approaches provide additional leverage in exploring the political dimensions of transition processes, elucidating how actors frame issues and therefore shape the possibilities that might constitute transition pathways. Building on the above contributions, this paper revisits the abovementioned political domains of transitions (ideas, institutions, and interests) and engages with these factors through the *multi-dimensional discursive approach* outlined in Rosenbloom et al. (2016), extending this framework and deploying it to examine a climate change mitigation effort of international significance: the phase-out of coal-fired power in Ontario, Canada.

This study makes five main contributions to transition literature. First, a fourth interacting political domain constituting the politics of sustainable energy transitions is proposed – that is, ideas, institutions, interests, *and infrastructure* (referred to here as the

E-mail address: daniel.rosenbloom@carleton.ca.

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four I's of sustainable energy transitions). Second, analytical refinements to the multi-dimensional discursive approach are offered in order to more explicitly embrace the four I's and *the implications storylines suggest for unfolding pathways*. Here I adopt the socio-technical conception of "pathways", which takes this concept to mean "the unfolding socio-technical patterns of change within societal systems as they move to meet human needs in a low-carbon fashion" (Rosenbloom, 2017, p. 39). Third, the analysis elucidates the framing struggles surrounding the pathway adopted to phase-out coal-fired power in Ontario, which has been called the "single largest GHG emissions reduction action on the continent" and resulted in an annual reduction of roughly 33 Mt of CO2eq (Ontario Ministry of Energy, 2015, p. 3). Not only does this represent a major GHG reduction effort, it is also an instance where a regulatory rather than market-based approach helped promote the journey to decarbonize energy systems. Shedding light on these dynamics is of particular relevance as international jurisdictions (e.g., Denmark, Britain, Finland, Germany, and others) embark upon similar initiatives. Fourth, while the climate-related priorities of Ontario's coal phase-out have been called into question (McKitrick, 2017; McKitrick and Aliakbari, 2017), this study demonstrates that this initiative was motivated and shaped by complex and evolving considerations that were rooted in regional air quality issues but also inextricably entwined with climate change concerns. Indeed, the analysis finds that continual struggles among contending interests and priorities helped define the pathway to phase-out coal. Finally, more general discursive patterns are identified which mark framing struggles around sustainability transitions, explaining these dynamics in terms of discursive resonance (i.e., the strength and alignment of components constituting storylines).

The argument in this paper unfolds in the following steps. The analysis begins by detailing the multi-dimensional discursive approach, proposed extensions, and specific methodological choices. Subsequently, the discursive dynamics surrounding the elimination of coal in Ontario are examined, revealing several contending storylines. The paper concludes by reflecting on the identified discursive patterns and their implications for transitions theory and practice.

2. Approach

Over the past several years, discourse has emerged as an increasingly important approach to elucidate the political dimensions of sustainability transitions (e.g., Bosman et al., 2014; Geels and Verhees, 2011; Munoz et al., 2014; Raven et al., 2016; Roberts, 2017; Rosenbloom et al., 2016; Teschner and Paavola, 2013). While discourse-transition crossovers are founded upon a variety of theoretical foundations (e.g., Fischer and Forester, 1993; Hajer, 1995; Schmidt, 2008), they have a fundamental, albeit often implicit, interest in scrutinizing the four interacting political domains of socio-technical transitions, weaving connections among ideas (as reflected by narratives and frames of reference), institutions (as reflected by rule systems), interests (as reflected by strategies and positions of political actors), and infrastructure (as reflected by material systems; see Fig. 1). Teschner and Paavola (2013, p. 449), for instance, submit that ideas "frame and constrain what can be perceived as possible solutions to societal problems" and "alongside infrastructural networks and vested interests, can help [explain] lock-in". Framing, in this view, is not only about making sense of complex realities but also relates to important strategic functions as actors actively structure policy issues in such a fashion as to privilege particular solutions and interests (Rein and Schön, 1993; Stone, 2001). Fuenfschilling and Truffer (2016, pp. 299–300), similarly, elaborate how actors work "to construct meaning, beliefs, rules or standards and thereby shape the course of institutional change", with discourse underpinning much of this "institutional work". Still others explicate the way in which actor networks struggle over the legitimacy of particular technological arrangements (e.g., nuclear energy facilities) and their associated socio-

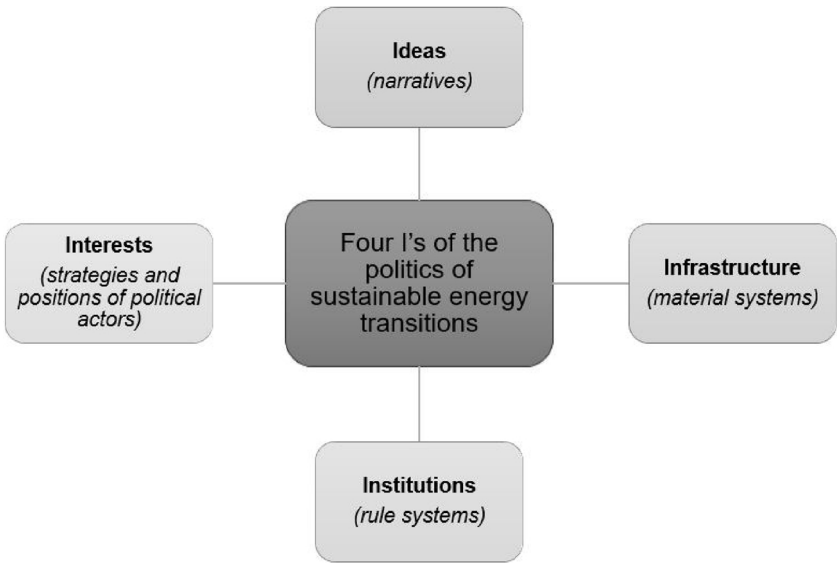

Fig. 1. The interacting political domains of sustainable energy transitions.
This figure depicts the four interacting domains that constitute the politics of sustainable energy transitions. Prominent ways these domains manifest are presented in parentheses, reflecting possible points of access for analysts to gain traction on the four I's.

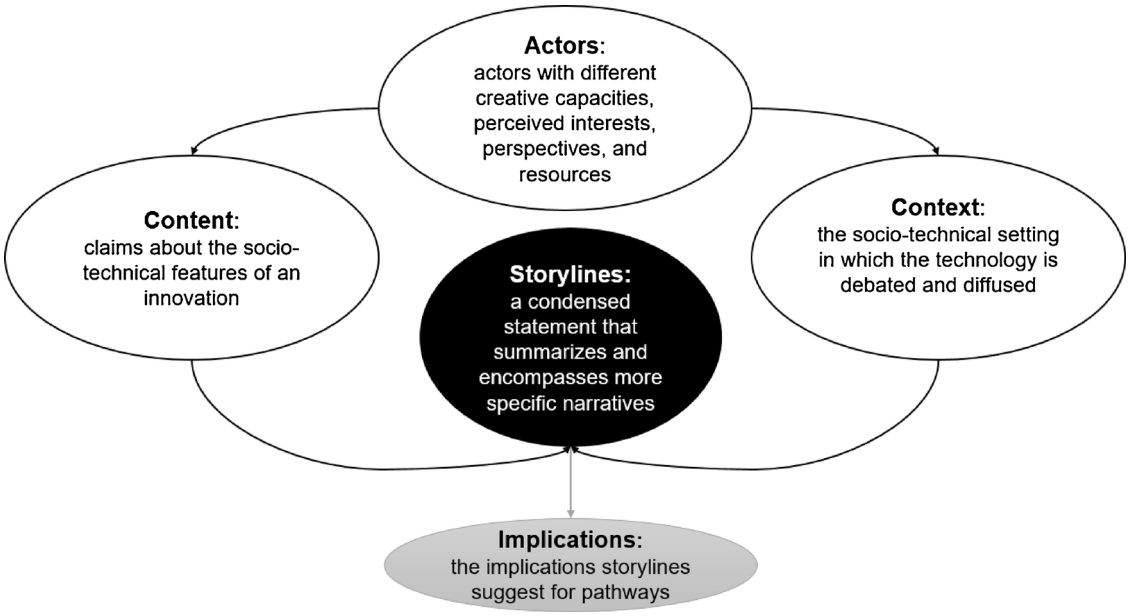
Actors:
actors with different creative capacities, perceived interests, perspectives, and resources
Content:
claims about the socio-technical features of an innovation
Context:
the socio-technical setting in which the technology is debated and diffused
Storylines:
a condensed statement that summarizes and encompasses more specific narratives
Implications:
the implications storylines suggest for pathways

Fig. 2. The multi-dimensional discursive approach to storyline formation.
This figure is adapted from Rosenbloom et al. (2016). *Extensions are presented in grey.*

technical possibilities in order to influence the course of innovation journeys (Geels and Verhees, 2011). Thus, discourse has important implications for transition processes as actors strategically leverage ideas to frame issues and technologies in order to privilege certain courses of action, thereby maintaining or disrupting socio-technical system configurations and constituting unfolding pathways to sustainability.

Drawing together these perspectives, this paper adapts and deploys the multi-dimensional discursive approach outlined in Rosenbloom et al. (2016). This approach captures: (1) the way in which contending actors struggle to frame technologies using narrative work in the context of outward-oriented policy debate; and (2) the process by which narratives are iteratively developed through the ideational capacity of actors (their resources, creativity, and perceived interests) to link content-related and contextual claims in order to frame a technology in a certain way and suggest a particular course of action (see Fig. 2). From this, three units of analysis are of particular interest: (i) *actors* who behave in a fashion that advances their perceived interests; (ii) the *content* or socio-technical characteristics of a specific technology; and (iii) the *context* in which the technology is debated, developed, and diffused. Here, a fourth unit of analysis is proposed: (iv) the *implications* suggested by storylines for pathways. This extension aims to more explicitly embrace the way in which storylines frame problems, modulate possibilities, and therefore shape the sequences of choices and consequences that link current societal arrangements to future low-carbon states (Rosenbloom et al., 2018). Moreover, these units of analysis encompass the four I's of sustainable energy transitions, revealing how interests (strategies and positions of political actors), ideas (storylines), institutions (context), and infrastructure (content but also context) interact in defining pathways (through the implicit and explicit implications of storylines). Taken together, this approach elucidates processes of discursive interaction among contending actors and demonstrates how agents, based on their perceived interests, selectively make claims about the socio-technical characteristics of a technology (e.g., technical efficiency, environmental impact, employment potential) and fit these claims to a specific context (e.g., institutional commitments, infrastructure investments, and issues facing the relevant societal system) in order to develop storylines that frame the issue and technology in a particular way. Importantly, these framing struggles are understood as continually evolving as actors actively respond to competing storylines (see Fig. 3).

The *discursive resonance* of a storyline (i.e., the extent to which a storyline gains traction among policymakers and the public) can be understood in terms of (1) the strength of the components constituting the storyline and (2) the degree of alignment among these elements. Adapting the work of Snow and Benford (2000, 1992) as well as Geels and Verhees (2011), the strength of storyline components relates to the believability of claims, the centrality of the issue, and the credibility of the messenger(s). The former concerns the correspondence between content-related claims (e.g., coal is dirty or solar creates jobs) and perceptions about the real world or proximate experiences (Snow and Benford, 1992). This is not a measure of objective accuracy but rather reflects a general sense of believability based on the perceived adherence between claims and what is considered to constitute evidence (i.e., some element of the world that can be pointed to as evidence of the embedded claim), accounting for the 'post-truth' character of recent policy debates (Walton-Roberts et al., 2014). The centrality of the issue relates to the perceived importance of the topic or debate (Geels and Verhees, 2011). Storylines that make relevant links to urgent contextual developments (e.g., pressing economic, health, or environmental issues) are likely to gain greater traction (Kingdon, 1984), though issues will continually rise and fall within the public consciousness (Downs, 1972). The appeal of a storyline is also linked to the perceived credibility of the actor transmitting it (Benford and Snow, 2000), which may differ across constituencies depending on worldviews. Beyond this, discursive resonance also involves

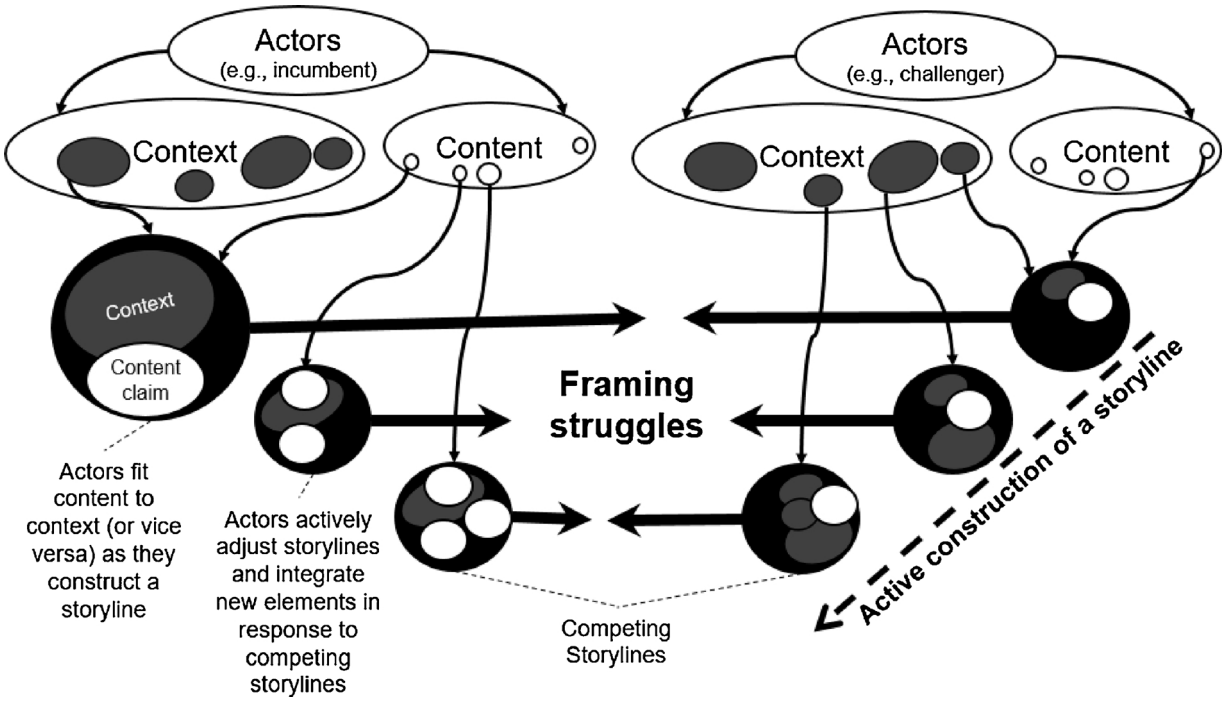

Fig. 3. Processes of multi-dimensional discursive interaction.
This figure is drawn from Rosenbloom et al. (2016).

the alignment of components constituting a storyline (i.e., content, context, and actors). That is, successful storylines are characterized by strong alignments among compelling content-related claims, relevant contextual developments, and credible messengers.

This study applies the abovementioned framework to explore the discursive interactions surrounding the coal phase-out in Ontario, Canada. Three research questions orient the study: (1) what are the prominent storylines surrounding the coal phase-out; (2) how did these storylines mature and interact over time; and, (3) what implications might these storylines have presented for the pathway to eliminate coal-fired power? That is, the primary focus of this analysis is to shed light on the interacting political domains of sustainable energy transitions (ideas, institutions, interests, and infrastructure) by exploring *storylines* and their *constituting components* (actors, content, and context). Here the paper deviates somewhat from more traditional discursive analyses (e.g., Hajer, 2006) that emphasize other factors (e.g., discourse coalitions).

To answer the abovementioned research questions, an analysis of media articles was conducted. Sources were selected based on a keyword search ("Ontario" AND "coal phase out" OR "phase out coal") of newspaper articles in the ProQuest Canadian Newsstream database – one of the largest full-text databases of historical newspaper articles for both major (e.g., the Toronto Star and Globe and Mail) and regional (e.g., the St. Catharines Standard and Sarnia Observer) media sources in Canada. The relevant temporal scope was determined to span from 1998 to the achievement of the coal phase-out in 2014. This search yielded a total sample of 345 newspaper articles after eliminating false positives and duplicates.

A three-stage process was employed to analyze these sources. First, an in-depth review of the 345 articles was carried out to identify emergent themes and categories (i.e., storylines and their constituting components) as well as the phases marking the framing struggles around coal-fired power in Ontario (e.g., key political battles spanning provincial elections). Second, sources were revisited to refine the previously identified themes, categories, and phases. Combining elements of thematic and content analysis (Dixon-Woods et al., 2005), the identification of prominent storylines and their constituting components (content, context, and actors) was carried out in an iterative and inductive fashion that permitted for the ongoing reconsideration of themes and categories. Finally, a third review was conducted to assess the article-level (as opposed to sentence or paragraph-level) frequency of storylines. This entailed revisiting articles to record instances of specific narratives contributing to each storyline, counting only distinct storylines once per article. This choice was made to avoid overweighting individual articles (or authors) as some sources contained several instances of specific narratives invoking a single storyline. In this fashion, the aim was to capture the evolving frequency of storylines *across* articles rather than *within* articles as this was considered to be a more accurate metric of the way in which a broad array of societal actors struggled to frame coal over the course of its phase-out in Ontario.

Additional steps were taken to supplement and crosscheck the discursive analysis. First, a broader examination of secondary sources (e.g., reports and academic articles) and power sector data (e.g., changes in installed electricity capacity) was carried out to trace the relevant historical dynamics surrounding the pathway to phase-out coal. Second, the results of the discursive analysis were exposed to expert opinion at the 2017 Ontario Network for Sustainable Energy Policy workshop. Nevertheless, there remain some

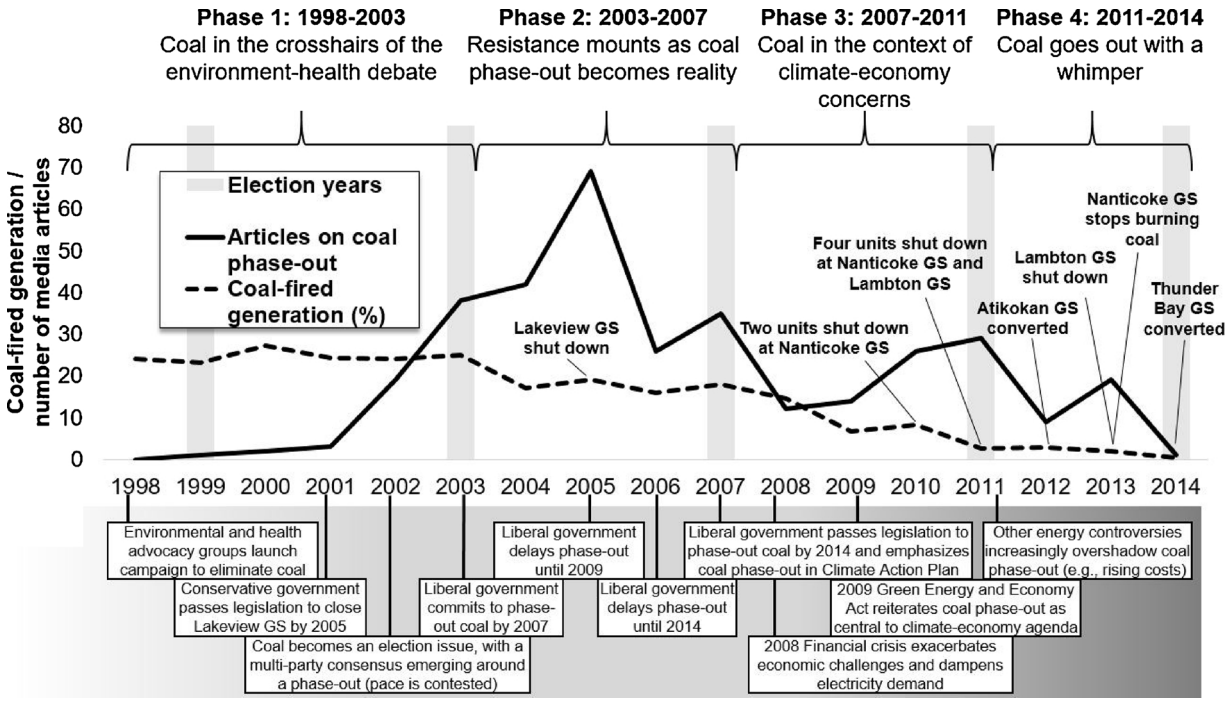
Phase 1: 1998-2003
Coal in the crosshairs of the environment-health debate
Phase 2: 2003-2007
Resistance mounts as coal phase-out becomes reality
Phase 3: 2007-2011
Coal in the context of climate-economy concerns
Phase 4: 2011-2014
Coal goes out with a whimper
Coal-fired generation / number of media articles
Election years
Articles on coal phase-out
Coal-fired generation (%)
Lakeview GS shut down
Two units shut down at Nanticoke GS
Four units shut down at Nanticoke GS and Lambton GS
Atikokan GS converted
Lambton GS shut down
Nanticoke GS stops burning coal
Thunder Bay GS converted
Environmental and health advocacy groups launch campaign to eliminate coal
Conservative government passes legislation to close Lakeview GS by 2005
Coal becomes an election issue, with a multi-party consensus emerging around a phase-out (pace is contested)
Liberal government commits to phase-out coal by 2007
Liberal government delays phase-out until 2009
Liberal government delays phase-out until 2014
Liberal government passes legislation to phase-out coal by 2014 and emphasizes coal phase-out in Climate Action Plan
2008 Financial crisis exacerbates economic challenges and dampens electricity demand
2009 Green Energy and Economy Act reiterates coal phase-out as central to climate-economy agenda
Other energy controversies increasingly overshadow coal phase-out (e.g., rising costs)

Fig. 4. Key phases and developments marking the pathway to eliminate coal-fired power.
The phases identified reflect: (1) the evolving discursive dynamics captured by the analysis of 345 media articles, (2) provincial election cycles, (3) the declining share of electricity supplied by coal-fired generating stations (GS) in Ontario as these assets were retired or converted to burn biomass, and (4) unfolding political and socio-institutional developments.

limitations in carrying out a discursive analysis of media articles. For instance, the more covert avenues through which actors may have been constituting and conveying narratives (e.g., as part of backroom lobbying) may not be adequately represented. Still, a focus on the media is warranted as it plays a dual role in both reflecting and shaping discourse and perceptions regarding technologies and policy (Delshad and Raymond, 2013; Mallett et al., 2017).

3. Discursive interactions surrounding the coal phase-out in Ontario

While the pathway to phase-out coal in Ontario is characterized by a variety of complex patterns, it is not the objective of this study to provide an in-depth reconstruction of these events as this has largely been addressed elsewhere (Harris et al., 2015; Rosenbloom and Meadowcroft, 2014; Winfield, 2017, 2012). Rather, the aim here is to 'zoom in' on the discursive dynamics unfolding during key phases of contestation marking this pathway (see Fig. 4) and in so doing shed light on the interconnected political domains of sustainable energy transitions (interests, ideas, institutions, and infrastructure) insofar as they are manifest in discursive interactions.

As illustrated in Fig. 4, the analysis identifies four key phases of contestation that mark the pathway to eliminate coal-fired power in the province. These phases reflect: (1) the evolving discursive dynamics captured by the analysis of 345 media articles, (2) provincial election cycles, (3) the declining share of coal in the province's electricity mix, along with (4) unfolding political and socio-institutional developments. Roughly spanning election years, the phases detail how discursive interactions around coal moved from health-environment controversies, to concerns around the reliable and efficient operation of the electricity system, to the rollout of a climate-economy agenda, and finally to relative obscurity. During these phases, the discourse can be categorized in terms of six contending storylines, which framed coal-fired power as either: *a public health crisis* (Delegitimizing storyline 1 or D1 in Table 1); *a drain on the economy* (D2 in Table 1); *a climate change problem* (D3 in Table 1); *an accepted and common component of electricity systems* (legitimizing storyline 1 or L1 in Table 1); *part of a reliable and affordable electricity system* (L2 in Table 1); or *'not so bad'* (L3 in Table 1).

Although all six storylines reflect a series of interesting framing struggles, this study focuses on the interactions among the three most prominent storylines (D1, D3, and L2; see Fig. 5), the constituting components of these storylines (actors, content, and context), as well as their maturation over the identified phases. In general, D1 gained traction in the first phase, built momentum in the second phase, and held a strong position relative to other storylines in later phases. In contrast, D3 acquired greater prominence during the final two phases. Responding to delegitimizing storylines, the prevalence of L2 was most notable in the second phase. Other storylines played a somewhat lesser role in the framing struggles surrounding the decline of coal. Prior to interrogating these discursive dynamics in greater detail however, a brief overview of the electricity system in Ontario is needed to help situate discursive interactions surrounding the coal phase-out.

Table 1
Contending storylines surrounding the coal phase-out.

Delegitimizing storylines	Illustrative narratives invoking storylines		Legitimizing storylines
D1: Coal-fired power as a public health crisis	*Coal-fired power is an outmoded and dirty way to generate power which impacts human health through reduced air quality, killing thousands annually*	*As Ontario's electricity system is highly interconnected and coal is a prevalent source of power across the region, it is not possible to move away from coal*	L1: Coal-fired power as an accepted and unavoidable component of modern electricity systems
D2: Coal-fired power as a drain on the economy	*Coal-fired power is reducing productivity and costing billions in additional health-related expenditures every year*	*Without coal, Ontario's power system would face severe reliability issues and rising costs*	**L2: Coal-fired power as part of a reliable and affordable electricity system**
D3: Coal-fired power as a climate change problem	*Coal-fired power is a major source of GHG emissions and its continued use is inconsistent with climate commitments*	*The environmental and health impacts of coal-fired power are limited and can be ameliorated through clean coal solutions*	L3: Coal-fired power as 'not so bad'

The three most prominent storylines are presented in bold.

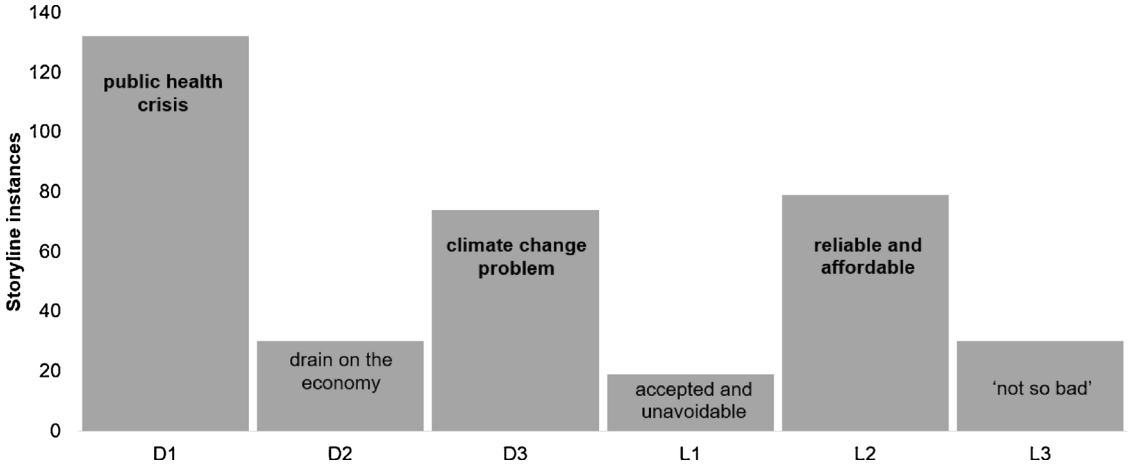

Fig. 5. Storyline instances from 1998 to 2014.
This figure displays the results of the discursive analysis of 345 newspaper articles. It depicts article-level instances of each storyline from 1998 to 2014. Delegitimizing storyline 1 (D1), delegitimizing storyline 3 (D3), and legitimizing storyline 2 (L2) represent the most prominent storylines.

At the outset of the coal phase-out debate in the late 1990s, electricity generation in the province of Ontario was principally based on nuclear (~40%), hydroelectric (~25%), and coal-fired (~25%) sources. This system configuration was secured under an expansionist orientation led by Ontario Hydro, the publicly-owned and operated utility (Rosenbloom and Meadowcroft, 2014). Under this orientation, energy consumption and extensive investments in grid infrastructure were promoted as part of a virtuous cycle benefitting key political and economic interests. Hydroelectric facilities were largely deployed in the first half of the twentieth century, but resource endowments were outpaced by demand as electric appliances and industrial applications diffused widely over the ensuing decades (McKay, 1983). To meet rising electricity demand, coal-fired assets – most prominently, Atikokan, Nanticoke, Lambton, Lakeview, and Thunder Bay generating stations – were built out in the 1960s and 70s. In the 1970s and 80s, attention shifted to nuclear energy, with substantial expenditures in Pickering, Bruce, and Darlington nuclear stations. By the late 1990s, the expansionist orientation driving the development of the electricity system was facing severe internal issues (e.g., the mismanagement of the nuclear energy file) along with external pressures (e.g., stagnating electricity demand and the rise of neoliberalism among policymakers). Moreover, a highly damaging performance assessment was released in 1997 that prompted the temporary shutdown of several nuclear reactors and an increasing reliance on coal capacity (Jackson and de la Mothe, 2001). These problems culminated in financial issues for Ontario Hydro, a crisis of legitimacy for the public utility, and rising electricity prices that opened a window of opportunity for the Conservative government to restructure the system in 1998 (Ontario Hydro was broken up into several operational units) and pave the way for a liberalized electricity market, though this would not fully materialize (Swift and Stewart, 2004).

3.1. 1998–October 2003: coal in the crosshairs of the environment-health debate

As environmental and health concerns mounted among the public in the late 1990s (Rowlands, 2007; Winfield, 2012), the growing reliance on coal became increasingly contentious. In light of this, environmental and health advocacy groups (e.g., the Ontario Clean Air Alliance and the Ontario Medical Association) launched campaigns to highlight the impacts of coal-fired power on human health and the environment. A report by the Ontario Medical Association (1998), in particular, explicated the links between coal, environmental issues (air quality), and public health (premature deaths). This report was instrumental in providing a credible evidence base from which to advocate the phase-out of coal-fired power. The prevalence of smog days in the region helped to further

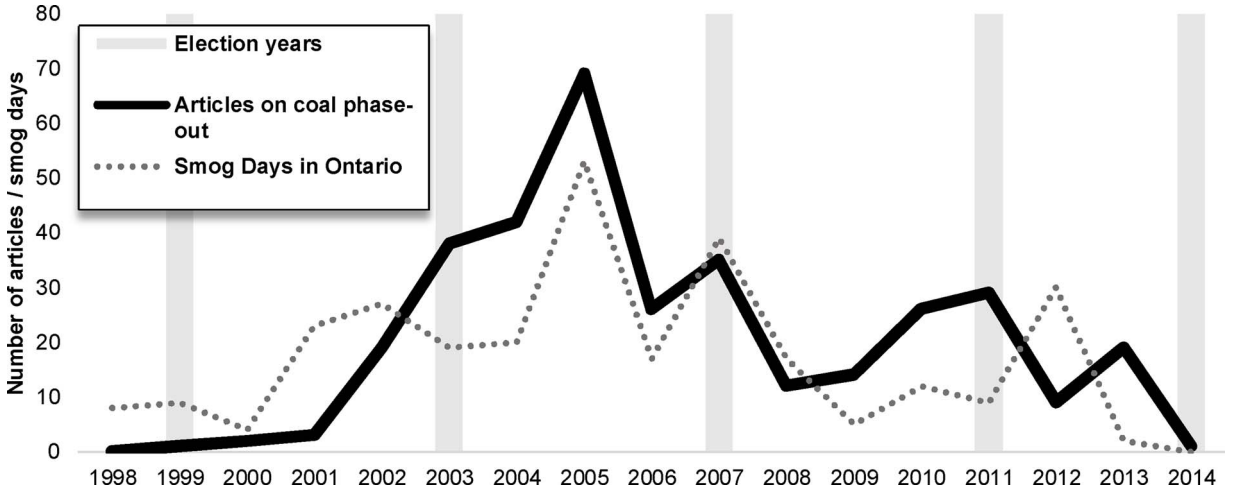

Fig. 6. Smog days and media coverage of the coal phase-out in Ontario.
This figure presents the number of smog days in Ontario and the sample of 345 media articles analyzed, pointing to the close relationship between the coal phase-out debate and regional health-environment issues.

crystallize environment-health linkages for the public and the media (see Fig. 6). Internationally and domestically, climate concerns were also beginning to mount with the signing of the Koto Protocol in 1997. In response to these developments, the Conservative administration appointed an all-party Select Committee on Alternative Fuel Sources in 2001 "to investigate, report and recommend ways of supporting the development and application of environmentally sustainable alternatives to our existing fossil (carbon-based) fuel sources" (Legislative Assembly of Ontario, 2002, p. 1). Shortly after, legislation was passed to close the Lakeview station near Toronto by 2005. In 2002, the committee recommended replacing coal-fired sources by 2015 through a combination of natural gas, renewables, and conservation.

And while earlier provincial elections featured some debate around coal (e.g., the 1999 Liberal platform vowed to convert coal-fired power plants to natural gas), the coal problem became an increasingly prominent issue in the run-up to the 2003 election. All three major political parties staked out positions, with a consensus emerging around the elimination of coal. However, there was still much disagreement about the pace of this reconfiguration and how exactly it might be achieved (converting the coal units to natural gas versus investing in new generating assets). The Conservatives targeted 2015, whereas the Liberals and New Democrats proposed a much more rapid deadline of 2007 (Harris et al., 2015).

3.1.1. Discursive dynamics

The analysis of discursive patterns indicates that the most prominent storyline advanced during this phase appealed to rising health-environment concerns, framing coal as a public health crisis (see Figs. 7 and 8). Invoking this storyline, health-environment advocates (but also municipal officials in Southwestern Ontario and political parties critical of the governing Conservatives)

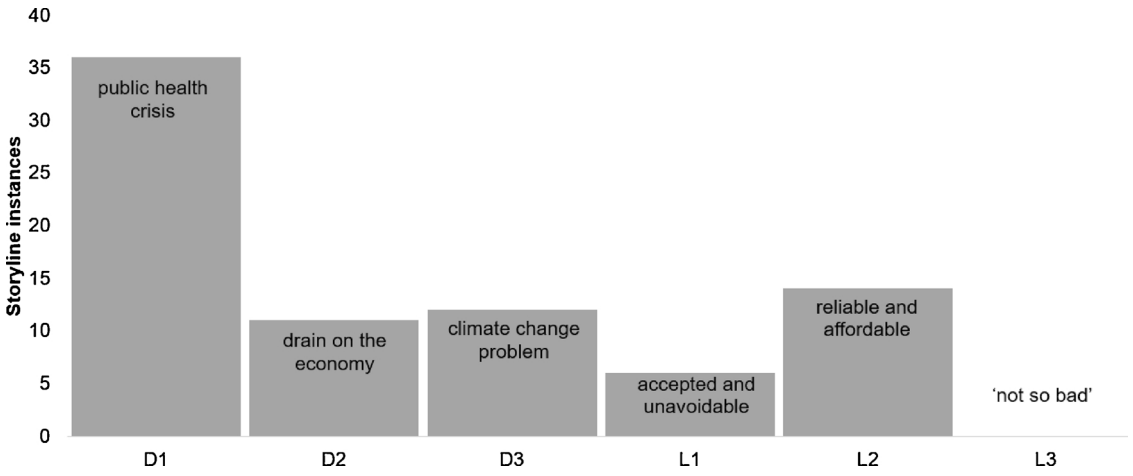

Fig. 7. Storyline instances (1998–October 2003).
This figure displays the results of a discursive analysis of 53 newspaper articles surrounding the coal phase-out during this period. It indicates that the storyline depicting coal-fired power as a public health crisis was most prominent at this time.

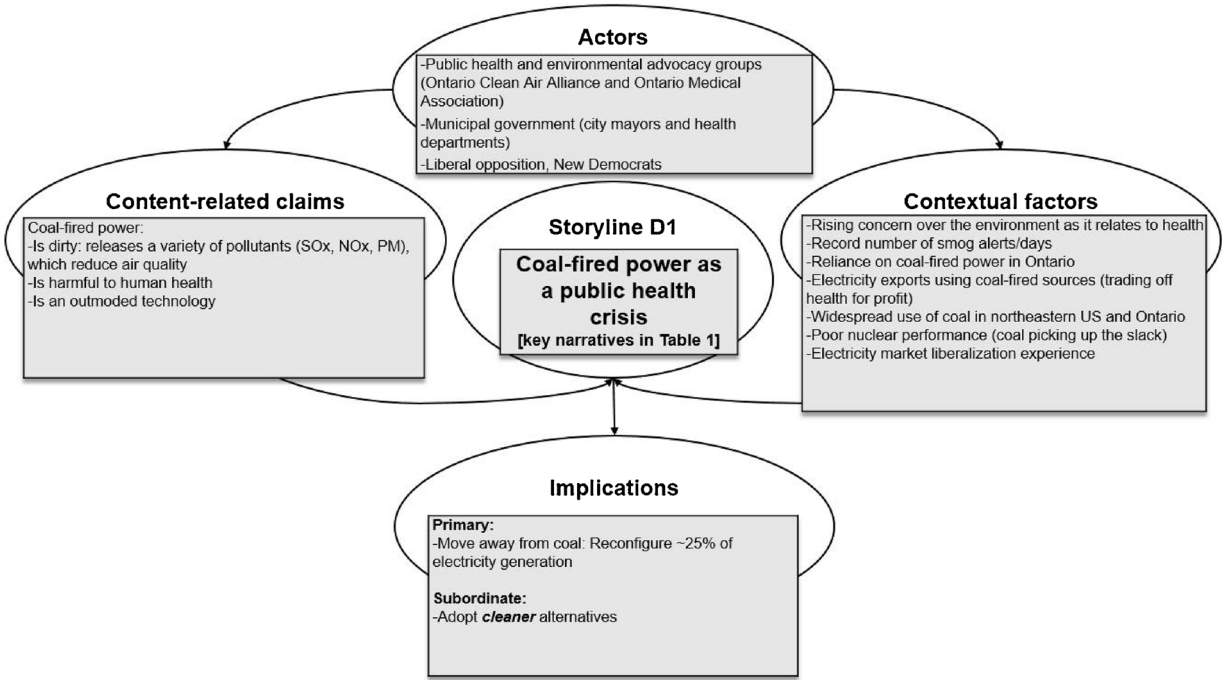
Actors
-Public health and environmental advocacy groups (Ontario Clean Air Alliance and Ontario Medical Association)
-Municipal government (city mayors and health departments)
-Liberal opposition, New Democrats
Content-related claims
Coal-fired power:
-Is dirty: releases a variety of pollutants (SOx, NOx, PM), which reduce air quality
-Is harmful to human health
-Is an outmoded technology
Storyline D1
Coal-fired power as a public health crisis
[key narratives in Table 1]
Contextual factors
-Rising concern over the environment as it relates to health
-Record number of smog alerts/days
-Reliance on coal-fired power in Ontario
-Electricity exports using coal-fired sources (trading off health for profit)
-Widespread use of coal in northeastern US and Ontario
-Poor nuclear performance (coal picking up the slack)
-Electricity market liberalization experience
Implications
Primary:
-Move away from coal: Reconfigure ~25% of electricity generation
Subordinate:
-Adopt cleaner alternatives

Fig. 8. Constituting components of storyline D1.
This figure shows how actors selectively wed content-related claims to context in order to craft specific narratives contributing to a storyline that frames coal-fired power as a public health crisis.

developed specific narratives that made selective content-related claims about the contribution of coal units to smog-related air pollutants and married these claims to relevant contextual factors such as the record number of smog days in the region. As part of this delegtimizing storyline, actors also linked claims about coal-fired power to problems in the electricity system such as declining environmental performance and electricity export practices that could be perceived as trading off public health for revenue (Elston, 2002). As summarized in Fig. 8, actors advanced narratives that brought together content and context in such a fashion as to portray coal-fired power as an outmoded and dirty source of power, with serious impacts on human health. This storyline aimed to solidify the causal story of coal as a major contributor to regional health-environment issues. In this way, coal, rather than the multitude of complex causal factors associated with poor air quality, was cast as the villain. The implication of this delegitimizing storyline was to eliminate coal-fired power as rapidly as possible through the reconfiguration of roughly 25% of electricity generation in the province. Indeed, according to health-environment advocates, "[t]he bottom line is simple: [c]oal power is costing us the air we breathe and it has to go" (Gibbons, 2000). In the leadup to the 2003 election, this storyline was taken up by the political opposition, with Dalton McGuinty, leader of the Liberal Party, stating that "[c]oal is 19th century, it's dirty, it's dangerous" (Lindgren, 2002).

While far less prominent than health-related narratives, actors also developed specific narratives invoking a climate-related storyline. As part of this, actors drew together content-related claims about the carbon-intensity of coal-fired power and placed this in the context of more ambitious climate commitments (e.g., the Kyoto Protocol) in order to paint coal as a climate change problem. The Ontario Public Health Association, for instance, stated that "Ontario's coal-fired power plants emitted 35 million tonnes of carbon dioxide last year – that is 78 per cent of the greenhouse gases that Ontario would need to cut in order to fulfil the reductions envisioned by the Kyoto Protocol", adding that "[w]hile we are concerned about all four environmental issues associated with coal-fired power plants, climate change drives our call for their phase-out"[1]; (Lee and Perrotta, 2002). Rather than solely advocating for the uptake of 'cleaner' sources (i.e., natural gas), this storyline implied the replacement of coal-fired units with low-carbon energy technologies.

Another set of narratives contributed to a storyline depicting coal-fired power as a drain on the economy. As part of this, actors claimed that coal reduced Ontario's competitive position (e.g., it resulted in productivity losses due to poor air quality and additional health care costs) and linked this to ongoing competitiveness concerns around globalization. A number of narratives invoking this storyline pointed to the modelling work of the Ontario Medical Association, which estimated the significant negative externalities of coal. This storyline called into question the economic benefits of coal-fired power, suggesting that there would be considerable cost-savings from the closure of coal units.

In marked contrast to the formation of delegitimizing storylines, the analysis suggests that actors supporting the continued use of coal were less organized during this early phase of discursive interaction. Perhaps due to the abovementioned restructuring process

[1] The four environmental issues the authors refer to are climate change, smog, acid rain, and mercury.

(the provincial electricity utility was broken up at the end of the 20th century and the sector was being prepared for market liberalization), actors involved in the operation of the electricity system were less engaged in this debate. Nevertheless, think tanks (e.g., Energy Probe), unions (e.g., Power Workers' Union), and the new operational units of the now-defunct Ontario Hydro (e.g., Ontario Power Generation who now owned and operated the coal plants) began to develop specific narratives contributing to two main storylines that attempted to counter calls for a phase-out. The most common legitimizing storyline painted coal as an important part of a reliable and affordable electricity system. Even though this storyline acknowledged the environmental impacts of coal, it emphasized the reliable and competitive features of this power source. These content-related claims were linked to unfolding contextual developments, including the 2003 northeast blackout and California energy crisis, asserting that rising costs and brownouts would become commonplace if coal were no longer part of the electricity mix. At base, this storyline implied that the continued use of coal was a prudent choice that would avoid economic and reliability problems. Interestingly, while there appeared to be support for a coal phase-out among the governing Conservatives, this storyline was taken up by key members of the party. The Conservative energy minister, for instance, stated on more than one occasion that without coal, reliability would become a serious problem (e.g., Lindgren, 2002), perhaps echoing the reservations of interests in the electricity sector.

Actors aligned with the established electricity configuration also advanced a storyline which framed coal-fired power as an accepted and unavoidable component of modern electricity systems, linking the competitive features of coal to its prevalence in neighboring jurisdictions. Sharing similarities with carbon leakage arguments, this storyline presented coal-fired power as inescapable in the context of interconnected electricity markets as shutting down domestic coal plants would mean ramping up generation from coal facilities in other jurisdictions. This storyline suggested that, although it might be appropriate to phase-out coal in the long-run (in concert with other jurisdictions), this capacity should be maintained given the realities of existing electricity systems.

3.2. October 2003–October 2007: resistance mounts as coal phase-out becomes reality

In October 2003, the Liberals swept to power and formed a majority government that allowed them to put the coal phase-out into motion. As election promises began to translate into concrete action, the Liberal government moved to procure alternative electricity sources (natural gas but also emerging renewables), bring laid up nuclear reactors back online at Pickering and Bruce stations, and promote conservation (Fig. 9). In essence, the phase-out entailed billions of dollars in grid infrastructure spending in order to displace the publicly-owned legacy coal units making up roughly 20% of electricity generation at the time. Confronted with a dysfunctional electricity market introduced but then quickly abandoned by the previous Conservative government in 2002, the Liberals reinstated central planning powers over electricity procurement through the establishment of a planning authority tasked with developing long-term system plans and managing government-directed power purchase agreements for new supply. In this fashion, a hybrid system emerged, which meshed central planning functions with preferences for private investment (Rosenbloom and Meadowcroft, 2014).

Despite the limited coal interests in Ontario (most of the coal was sourced from the United States and western provinces), actors mobilized and challenged the coal phase-out (Rosenbloom and Meadowcroft, 2014). These actors included think tanks (e.g., Fraser Institute and Energy Probe), labor unions (e.g., the Power Workers' Union), industry associations (e.g., Association of Major Power Consumers of Ontario), and communities where coal plants were sited (e.g., Haldimand County). Ontario Power Generation also made efforts to reassert the importance of coal-fired power, but this organization was largely beholden to the priorities of the government as its shareholder.

Yielding to this resistance, the Liberal administration began to reassess the timeline for the phase-out. In the summer of 2005, the Liberals extended the 2007 deadline to 2009 in light of insufficient investment in new supply and rising peak power consumption – 9

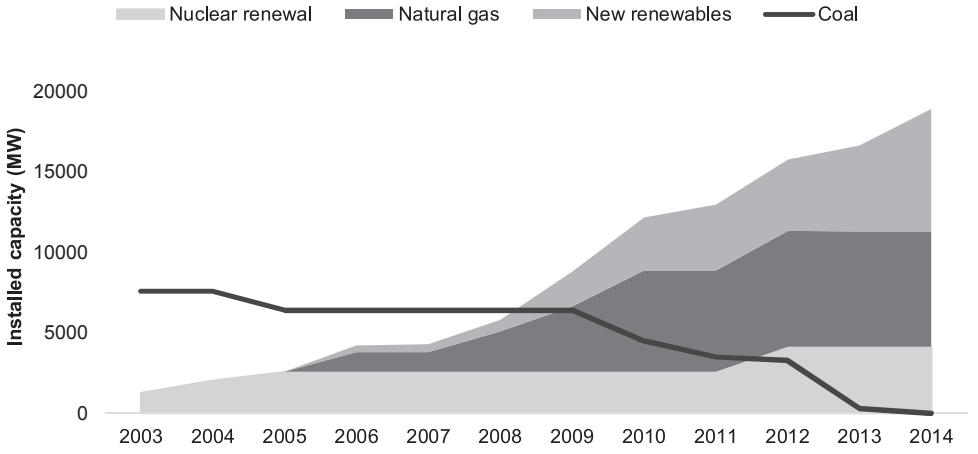

Fig. 9. New electricity capacity procurement and the decline of coal.
This figure displays the diminishing role of coal-fired electricity capacity as new sources (natural gas, nuclear restarts at Bruce station, and emerging renewables) were brought online. Data for this figure are drawn from the Independent Electricity System Operator's progress reports on contracted electricity supply.

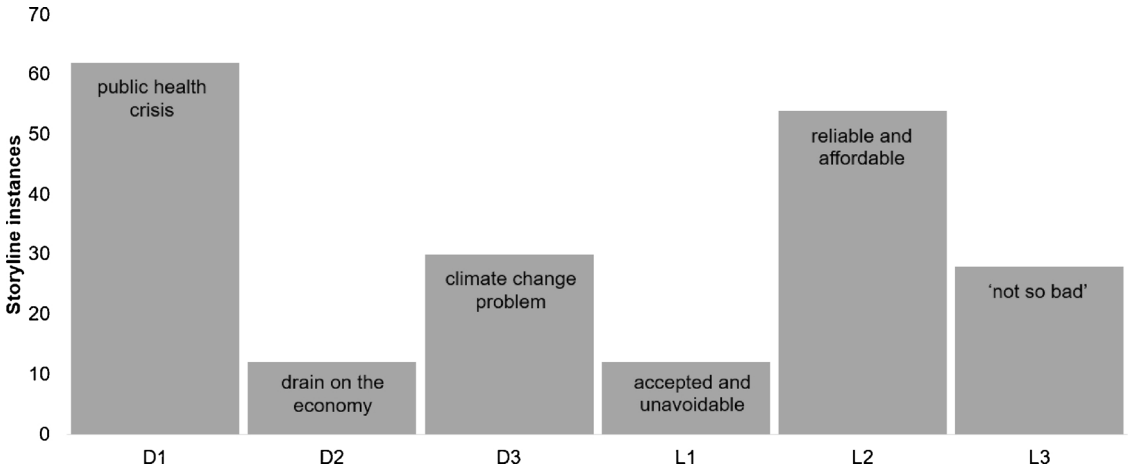

Fig. 10. Storyline instances (October 2003–October 2007).
This figure displays the results of a discursive analysis of 179 newspaper articles surrounding the coal phase-out during this period. It indicates that the storyline depicting coal-fired power as part of a reliable and affordable electricity system acquired increasing prominence at this time.

of the top 20 record demand days in the last 15 years occurred in 2005 (Independent Electricity System Operator, 2017). Unexpectedly, proponents of the coal phase-out (e.g., the Ontario Clean Air Alliance) were relatively supportive of the delay, acknowledging the ambitious nature of the task. However, in the fall of 2006, the Liberals again delayed the target date to 2014, citing reliability issues (Cundiff, 2015). In contrast to the earlier delay, this attracted more forceful demands to accelerate the pacing of the phase-out. The above battles continued to play out during the leadup to the 2007 elections. And, in the summer of 2007, the Liberal government passed legislation that enshrined the 2014 deadline (Ontario Ministry of Energy, 2015). At the same time, the climate credentials of the coal phase-out were emphasized in the province's first climate action plan (Ministry of the Environment and Climate Change, 2007). Interestingly, the Conservatives began to back away from their commitment to phase-out coal by 2015, intimating that they would instead install scrubbers on coal units and only replace them when practicable (McCarthy, 2007).

3.2.1. Discursive dynamics

The discursive analysis indicates that this phase is marked by the most intense episode of political contestation surrounding the elimination of coal in Ontario. While proponents of the coal phase-out continued to advance a series of narratives invoking storylines that delegitimized coal-fired power, competing actors engaged in more extensive efforts to legitimize the place of this electricity source in Ontario's energy future (see Fig. 10). During this time, the character of storylines delegitimizing coal remained largely similar. In the face of strong health-environment concerns and frequent smog alerts, the health crisis storyline appeared most frequently. However, as specific narratives were adapted, they began to reveal internal tensions among proponents, particularly with respect to the role of nuclear in displacing coal. On the one hand, health-environment advocates fit content-related claims about coal to unfolding contextual developments involving delays in restarting laid up nuclear reactors, contending that "[f]urther reliance on nuclear power could jeopardize Ontario's coal phase-out and leave us with steadily growing air-quality problems" (Gibbons, 2004). In this view, poor nuclear reactor performance was the reason that Ontario had to ramp up coal use in the first place. The governing Liberals, on the other hand, continued to advance health-related narratives, but did not draw on nuclear performance issues as the administration was entertaining nuclear renewal as a potential option to eliminate coal (Toronto Star, 2005).

In marked contrast to the first phase, the analysis shows that storylines legitimizing coal acquired greater prominence during this period (as illustrated in Fig. 10). A wide-ranging network of actors mobilized to advance narratives about the importance of coal for the electricity system in the province. Of these narratives, the most common revolved around reliability and affordability (see Fig. 11). Major power consumers, labor unions, and actors involved in the operation of the electricity system, among many others, leveraged their resources to link the competitive and reliable features of coal to projected increases in electricity demand and ongoing concerns about grid infrastructure in order to frame coal as central to an affordable and reliable electricity system. The Fraser Institute, for instance, stated that "closing the coal-fired plants will imperil industrial development in Ontario, increase energy costs, and reduce the reliability of the electricity supply" (Standard, 2005). Similarly, the Power Workers' Union contended that "[c]oal is the insurance Ontario will have reliable, reasonably priced electricity today and tomorrow" (Stephenson, 2005). Rather than replacing the coal-fired plants, the implication here was to maintain this capacity for either the long-run or until alternative energy sources could be brought online at a reasonable cost. Some also advocated installing scrubbers on the plants to address immediate health concerns, likely securing their place in the electricity mix for the long-term. The reliability and affordability storyline resonated with the public and decision-makers as the governing Liberals began to moderate their phase-out aspirations. Indeed, in justifying the need to delay the coal phase-out until 2014, Premier McGuinty submitted that "[w]e've always got to reconcile our eagerness to eliminate coal-fired generation with our responsibility to maintain a reliable supply of affordable electricity" (Howlett, 2006). In this fashion, even proponents of the phase-out began to display concerns about the pace and scale of change required now that implementation was underway.

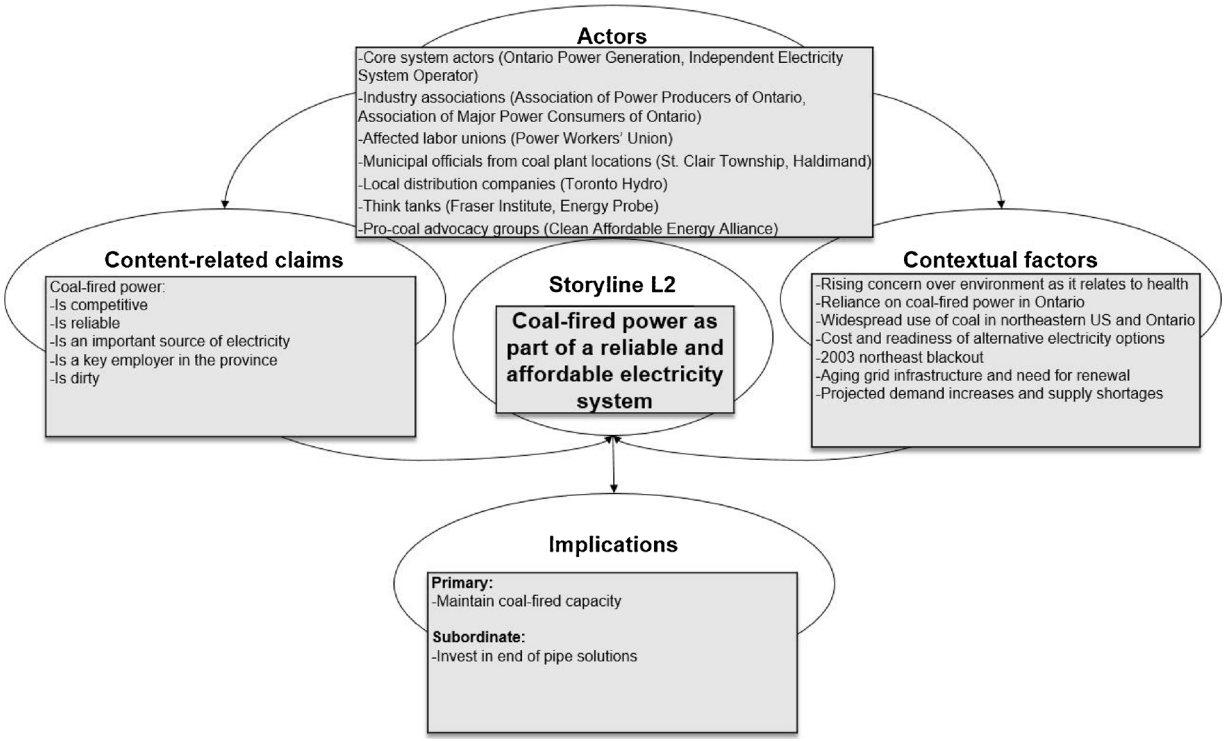
Actors
-Core system actors (Ontario Power Generation, Independent Electricity System Operator)
-Industry associations (Association of Power Producers of Ontario, Association of Major Power Consumers of Ontario)
-Affected labor unions (Power Workers' Union)
-Municipal officials from coal plant locations (St. Clair Township, Haldimand)
-Local distribution companies (Toronto Hydro)
-Think tanks (Fraser Institute, Energy Probe)
-Pro-coal advocacy groups (Clean Affordable Energy Alliance)
Content-related claims
Coal-fired power:
-Is competitive
-Is reliable
-Is an important source of electricity
-Is a key employer in the province
-Is dirty
Storyline L2
Coal-fired power as part of a reliable and affordable electricity system
Contextual factors
-Rising concern over environment as it relates to health
-Reliance on coal-fired power in Ontario
-Widespread use of coal in northeastern US and Ontario
-Cost and readiness of alternative electricity options
-2003 northeast blackout
-Aging grid infrastructure and need for renewal
-Projected demand increases and supply shortages
Implications
Primary:
-Maintain coal-fired capacity
Subordinate:
-Invest in end of pipe solutions

Fig. 11. Constituting components of storyline L2.
This figure shows how actors selectively wed content-related claims to context in order to craft specific narratives contributing to a storyline that frames coal-fired power as part of a reliable and affordable electricity system.

During this time, actors also developed narratives contributing to somewhat less prominent legitimizing storylines. Invoking a storyline depicting coal-fired power as accepted and unavoidable, the Millwright and Machine Erectors Union argued that "[t]he only alternative is to buy more power from the United States, who use even more coal" (Lafleche, 2005). Another storyline also emerged, which attempted to downplay the overall impact of coal on health and the climate, framing coal as 'not so bad'. Narratives invoking this storyline attempted to undermine the closure of Ontario's coal plants by trivializing its merits, making content-related claims about the pollution from coal units but wedding these negative claims to contextual factors surrounding the many other contributors to smog and GHG emissions. Responding to health-related narratives painting coal as a major contributor to air pollution, coal supporters suggested that "Ontario's coal plants combined account for only six per cent of the province's pollution"[2] (McCaffery, 2005). As part of this, some coal advocates pointed to clean coal solutions (e.g., scrubbers and carbon capture and sequestration) as a way to extend the role of this power source.

3.3. October 2007–October 2011: coal in the context of climate-economy concerns

In October 2007, the Liberals were re-elected with a majority government and carried on with the implementation of the coal phase-out. Although political battles over the phase-out continued, attention began to shift to economic challenges exacerbated by the 2008 global financial crisis (Winfield, 2012). Responding to rising economic and climate concerns, the Liberal government introduced the Green Energy and Green Economy Act in 2009 (with the Feed-in Tariff for new renewables as its centerpiece program). At the same time, the economic downturn led to a decline in electricity demand, with annual electricity consumption dipping from roughly 150 TWh in 2007 to 139 TWh in 2008. This assuaged concerns about system reliability and facilitated the closure of coal units (6 were shuttered between 2010 and 2011). By the 2011 elections, the place of coal-fired power had declined to less than 5% of total generation (as depicted in Fig. 4). In light of this much-diminished role, lingering resistance to the phase-out was largely limited to affected municipalities, fearing lost tax revenues and employment. The decision to convert the Thunder Bay and Atikokan plants to biomass helped mitigate some of these concerns (Harris et al., 2015).

3.3.1. Discursive dynamics

While the formulation of delegitimizing storylines remained largely unchanged in this phase, contextual developments

[2] While health-environment advocates largely draw on reports by the Ontario Medical Association (2000, 1998) to estimate the impacts of coal-fired generation, coal supporters appear to refer to the work of the Fraser Institute (McKitrick et al., 2005).

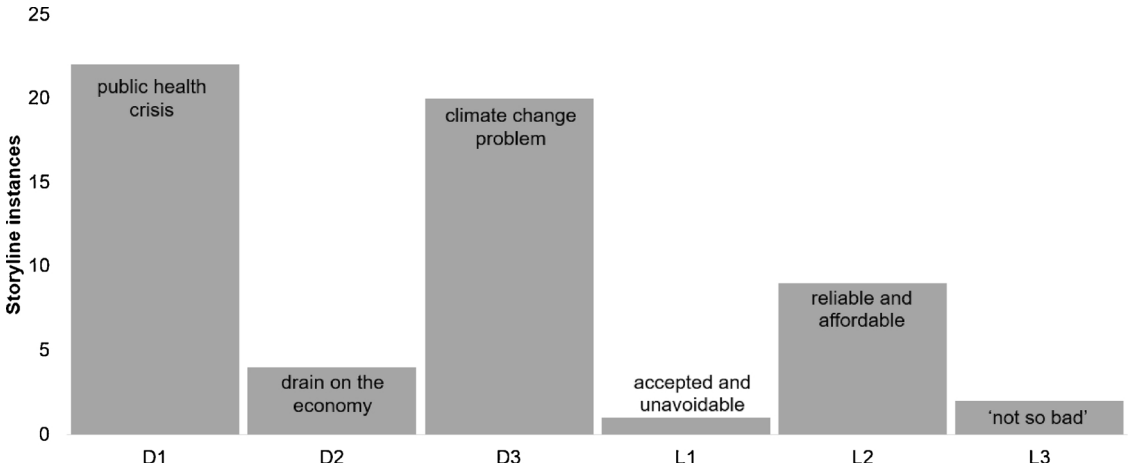

Fig. 12. Storyline instances (October 2007–October 2011).
This figure displays the results of a discursive analysis of 82 newspaper articles surrounding the coal phase-out during this period. It indicates that the storyline depicting coal-fired power as a climate change problem acquired increasing prominence at this time.

surrounding the 2008 global financial crisis and the ensuing push to develop a green economy encouraged the uptake of a storyline framing coal as a climate problem (see Figs. 12 and 13). As part of this, actors linked content-related claims about the carbon-intensity of coal to contextual factors concerning the emerging climate-economy agenda. The Ontario Clean Air Alliance, for instance, linked the elimination of coal to green economy aspirations, stating that "switching off coal for good is a great way to demonstrate that this province truly is ready for the new green global economy" (Gibbons, 2010). Similarly, the Canadian Association of Physicians for the Environment emphasized the importance of moving away from coal for ambitious climate action, asserting that it "is critical because it's the single largest greenhouse gas reduction project in North America" (Forman, 2010). To be sure, the government also increasingly tied the shutdown of coal units to its green economy agenda, suggesting that it was essential to make room for the ongoing rollout of low-carbon energy technologies (Leslie, 2009). The discursive analysis also indicates that internal tensions around the pace of the phase-out had yet to be fully resolved. Health-environment advocates attempted to leverage promising contextual developments (e.g., ambitious institutional commitments around new renewable deployment) in order to press for a more rapid

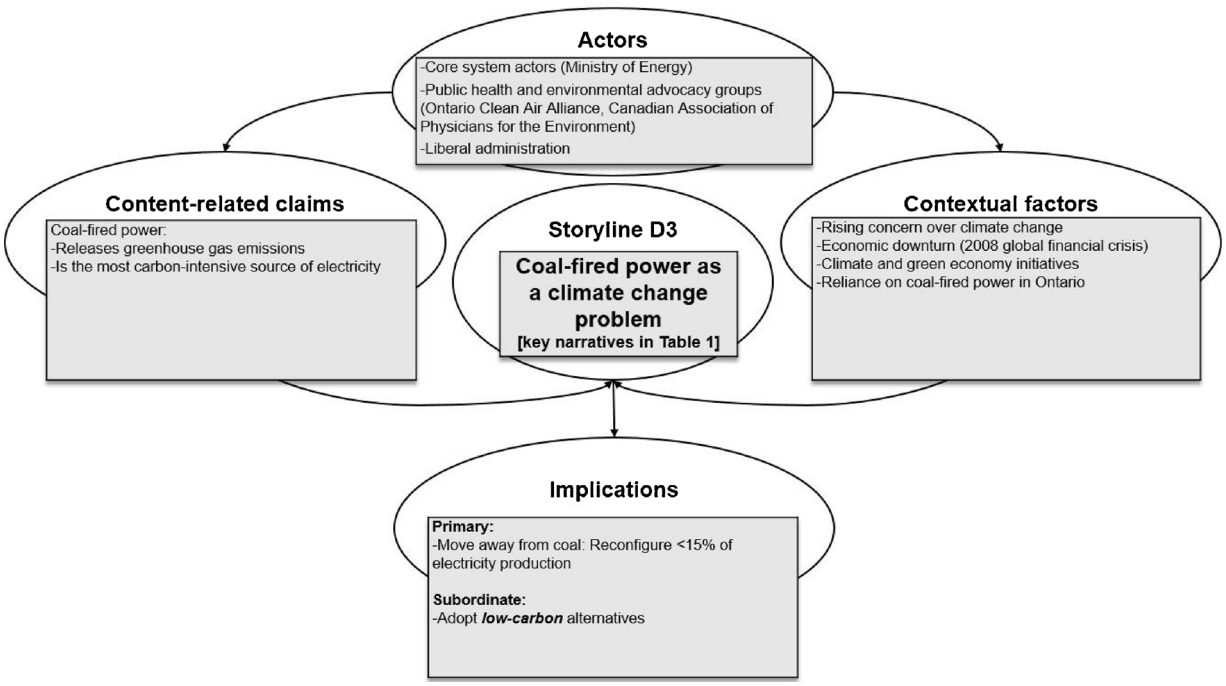
Actors
-Core system actors (Ministry of Energy)
-Public health and environmental advocacy groups (Ontario Clean Air Alliance, Canadian Association of Physicians for the Environment)
-Liberal administration
Content-related claims
Coal-fired power:
-Releases greenhouse gas emissions
-Is the most carbon-intensive source of electricity
Storyline D3
Coal-fired power as a climate change problem
[key narratives in Table 1]
Contextual factors
-Rising concern over climate change
-Economic downturn (2008 global financial crisis)
-Climate and green economy initiatives
-Reliance on coal-fired power in Ontario
Implications
Primary:
-Move away from coal: Reconfigure <15% of electricity production
Subordinate:
-Adopt low-carbon alternatives

Fig. 13. Constituting components of storyline D3.
This figure shows how actors selectively wed content-related claims to context in order to craft specific narratives contributing to a storyline that frames coal-fired power as a climate change problem.

closure of coal units, proposing a 2011 target (Gibbons, 2010). Yet, the Liberal administration adhered to the 2014 deadline.

According to the discursive analysis, the number and breadth of actors engaged in legitimizing the role of coal-fired power declined markedly in this phase. What remained were a few advocacy groups, unions, and think tanks producing narratives echoing earlier debates. There are a number of possible reasons for this. First, although coal supporters would have preferred to abolish the coal phase-out altogether, it may have been considered strategic to accept the delay and withdraw until a more sympathetic political administration took power. Second, relevant actors were likely allocating their limited resources to emerging political controversies (green energy incentives, for instance). Third, some concerns had been addressed through the delay (reliability would not be sacrificed) and other compromises (converting plants to biomass). Fourth, and perhaps most importantly, the overall position of coal had declined considerably due to grid investments and unfolding developments (dampened electricity demand brought on by the economic slowdown, in particular), so the stakes were no longer as high.

3.4. October 2011–2014: coal goes out with a whimper

After the 2011 election in which the Liberals lost their majority status (due in part to other energy-related controversies), electricity demand continued to stagnate and the remaining coal-fired stations were held in reserve until they could be shut down or converted to biomass. Debates focused on more immediate political interventions in the electricity system (e.g., green energy investments and rising costs) rather than historical engagement around the coal phase-out (Rosenbloom et al., 2018). Signaling the end of the coal-fired era in the province, Nanticoke – once the largest coal plant in North America and the single most important point-source of GHG emissions in Canada (accounting for 29.3 Mt of CO2eq or 4% of Canada's total GHG emissions in 2005) – stopped burning coal in 2013 (Ontario Ministry of Energy, 2015). This was followed by the shutdown or conversion of the few remaining coal units by April 2014.

3.4.1. Discursive dynamics

The analysis suggests that discursive interactions were relatively sparse during this phase (see Fig. 14). With respect to storylines delegitimizing coal, most actors reiterated narratives from earlier periods in order to reaffirm the merits of the phase-out and celebrate its accomplishment. Environmental Defence, for instance, celebrated the climate benefits of shuttering coal units by stating that "Ontario has shown the world that bold action on climate change can be done" (Mississauga News, 2013). The Ontario Clean Air Alliance likewise submitted that moving away from coal "has led to a substantial improvement in our air quality" (Kane, 2013). Narratives legitimizing coal were limited, with only a few instances attempting to paint the move away from coal as trading off economic outcomes for environmental benefits (Adams, 2013; Vo, 2012).

4. Discussion and conclusion

This study examines framing struggles surrounding the pathway to phase-out coal in Ontario. In doing so, it generates several insights for the theory and practice of sustainability transitions. At the broadest level, it indicates that the multi-dimensional discursive approach can be usefully deployed to scrutinize the interacting political domains of sustainable energy transitions. That is, it shows promise in embracing and weaving together ideas, interests, institutions, and infrastructure. More specifically, the analysis elaborates how pathways are shaped by processes of continual negotiation among evolving considerations and priorities. Indeed, it was the dialectical interaction and layering of priorities around health-environment, climate change, as well as affordability and reliability that helped define the pathway to eliminate coal in Ontario. Framing coal in terms of these concerns modulated the envelope of possibilities considered and privileged certain courses of action. Health-environment problems, for instance, provided the

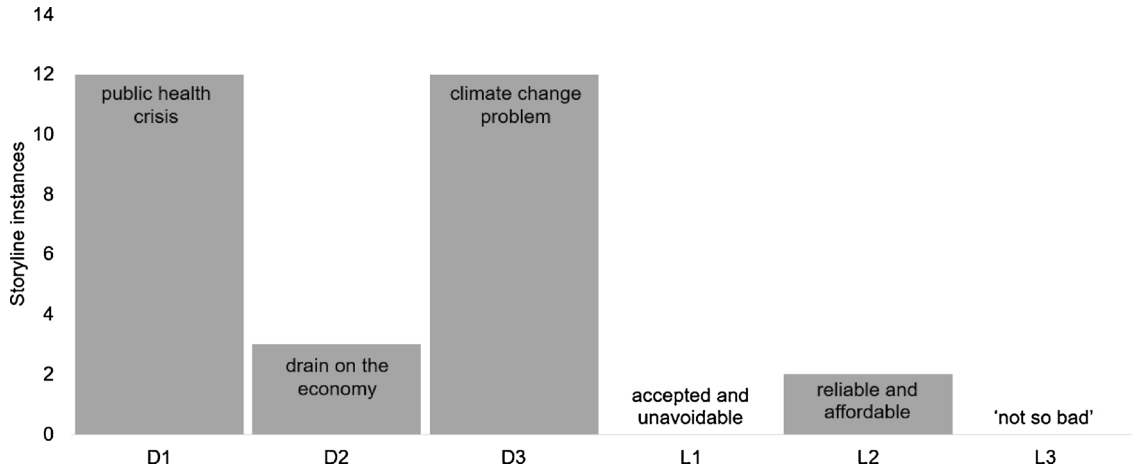

Fig. 14. Storyline instances (October 2011–April 2014).
This figure displays the results of a discursive analysis of 31 newspaper articles surrounding the coal phase-out during this period.

impetus for the phase-out as narratives linking coal to regional air quality issues catalyzed debate and imparted a sense of urgency (thousands were supposedly dying each year) that helped stimulate an accelerated response. Framing coal in relation to climate change also helped determine what might constitute an appropriate course of action. From as early as 2003, low-carbon new renewables were pursued *in addition* to cleaner burning natural gas as a replacement for coal capacity. And, even in the face of mounting resistance, decision-makers selected not to install scrubbing systems on all coal-fired units to maintain their operation. Instead, the Liberal administration opted to shutter or convert the plants to burn carbon-neutral biomass. The pace of the phase-out was also moderated by reliability and cost priorities. Yet, the move away from coal was not abandoned even when coal-fired power was no more than reserve capacity. Together, this suggests that continual negotiations among evolving considerations and problem frames helped define the pathway to phase-out coal. Perhaps most importantly however, these problem frames were not simply imposed by politically neutral and external pressures but were rather strategically leveraged by actors to shape the course of societal development.

By attending more explicitly to the implications of storylines, the analysis further elucidates how actors strategically frame issues and innovations to privilege certain institutional and infrastructural choices. Health-environment advocates, on the one hand, advanced storylines that framed coal as a serious health-environment crisis and implied a rapid phase-out. Through their discursive maneuvers, these groups persistently placed pressure on decision-makers to enact and renew commitments that would see the ramp down of coal-fired sources. This positioning was largely successful as health professionals and environmental groups were likely viewed as more credible actors than energy system operators in matters of health and environment. On the other hand, actors engaged in the operation of the electricity system, think tanks, and affected unions largely reinforced established arrangements and attempted to limit new policy commitments. They prepared storylines that married technical and economic claims to mounting reliability concerns in order to support the role of coal-fired power. This network of actors had close ties to economic interests and the operation of the electricity system, which may have bolstered their credibility on these fronts. The positioning of political parties, in contrast, was more dynamic. While there was much to gain by allying with health-environment advocates in vilifying coal, the interests of key actors in the electricity sector could not be ignored. The Conservatives (in supporting but then distancing themselves from phase-out proposals) and Liberals (in advocating a rapid phase-out but then delaying the deadline on two occasions) pivoted between these groups and their positions.

From this discussion, it may also be possible to discern more general patterns of framing struggles around sustainability transitions (see Fig. 15). These patterns reflect: (1) interactions among competing storylines; and (2) the resonance of disruptive (regime-

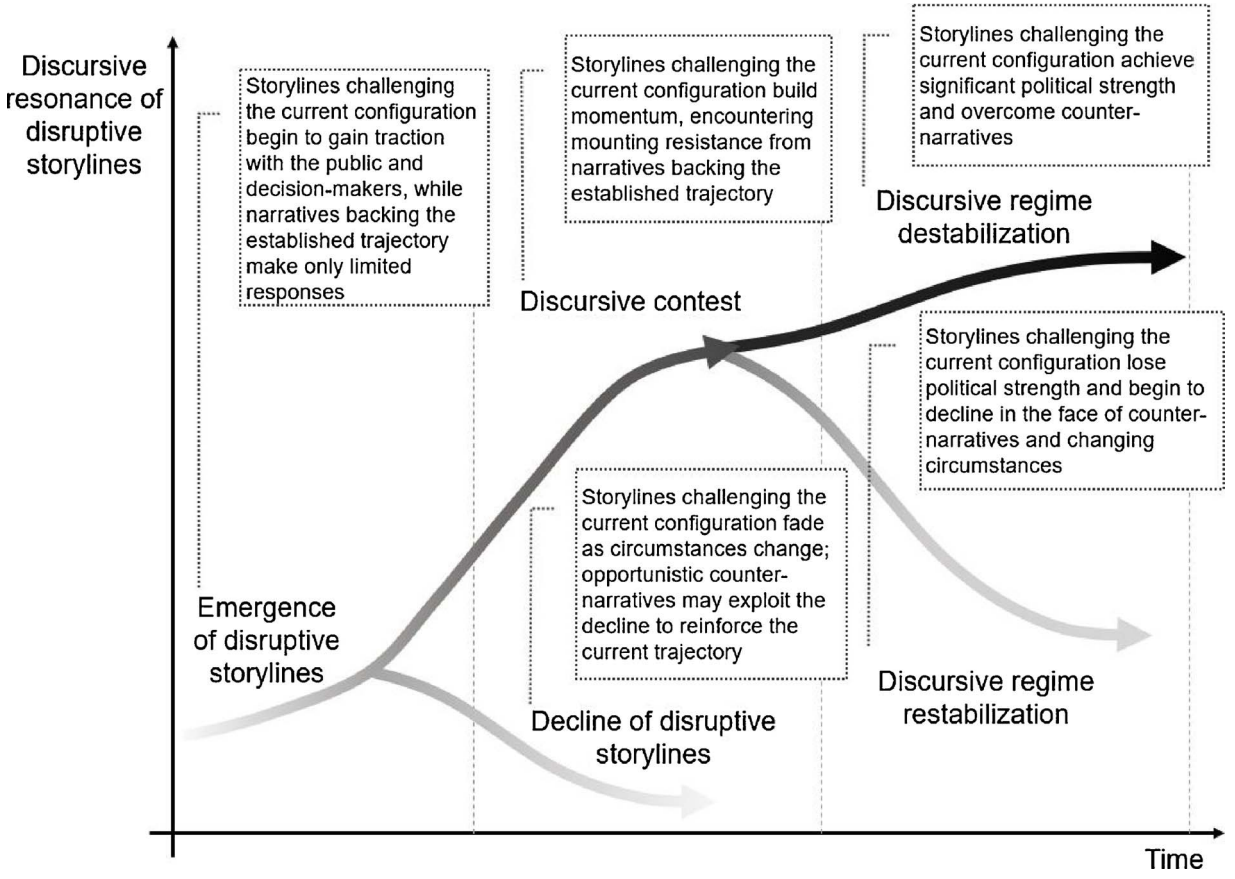
Discursive resonance of disruptive storylines
Storylines challenging the current configuration begin to gain traction with the public and decision-makers, while narratives backing the established trajectory make only limited responses
Storylines challenging the current configuration build momentum, encountering mounting resistance from narratives backing the established trajectory
Storylines challenging the current configuration achieve significant political strength and overcome counter-narratives
Discursive regime destabilization
Discursive contest
Storylines challenging the current configuration lose political strength and begin to decline in the face of counter-narratives and changing circumstances
Storylines challenging the current configuration fade as circumstances change; opportunistic counter-narratives may exploit the decline to reinforce the current trajectory
Emergence of disruptive storylines
Discursive regime restabilization
Decline of disruptive storylines
Time

Fig. 15. Discursive patterns marking framing struggles around sustainability transitions.

challenging) storylines based on the strength and alignment of constituting components (see Section 2). While others have focused on discourses internal to the regime and what they might suggest for the stability of the socio-technical configuration (Bosman et al., 2014), here the emphasis is on outward-oriented narratives and how disruptive storylines could erode the legitimacy of the existing configuration and its trajectory (Turnheim and Geels, 2012, 2013). Five broad discursive patterns are identified: *emergence of disruptive storylines*, *decline of disruptive storylines*, *discursive contest*, *discursive regime restabilization*, and *discursive regime destabilization*. These patterns do not necessarily progress in a linear fashion but rather unfold along a variety of potential paths. For example, the emergence of disruptive storylines may be proceeded by a discursive contest and a period of discursive regime destabilization, which may then be followed by renewed contests and eventual discursive regime restabilization.

The *emergence of disruptive storylines* occurs when regime-challenging storylines begin to gain traction and only encounter limited responses. This pattern may unfold because disruptive storylines represent a minor threat and/or a concerted response would help to legitimize rival positions. In the case of the coal phase-out, this captures the period of 1998–2003 as storylines delegitimizing coal increasingly resonated within political debates in the face of only limited resistance. The *decline of disruptive storylines* takes place when regime-challenging storylines fade as the strength and alignment of their constituting components weaken. This decline may relate to changing developments (e.g., other contextual factors capture the public imagination), weakened content-related claims (e.g., claims fail to connect with evidence or experience), or a loss of credibility among key messengers (e.g., actors are implicated in a scandal). Opportunistic counter-narratives may take advantage of this decline to further undermine alternative possibilities (e.g., calling attention to unfulfilled claims about green jobs). However, disruptive storylines may re-emerge if conditions change and constituting components are updated. In contrast, a *discursive contest* may transpire if storylines challenging the system configuration gain momentum until they merit a more vigorous response. These contests may be protracted as storylines undergo several adjustments in reaction to changing circumstances and rival narratives. In the case of the coal phase-out, this reflects the period of 2003–2007 during which time regime-challenging storylines encountered mounting resistance. This discursive pattern may also mark the ongoing debate around the phase-out of internal combustion engines as some auto manufacturers have begun to advance counter-narratives about 'consumer choice' in an attempt to erode mounting support for regulatory action (Bradsher, 2017).

Two final patterns may interrupt or follow from discursive contests. *Discursive regime restabilization* may occur if disruptive storylines lose momentum in the face of intense competition from counter-narratives. During the coal phase-out, narratives that appealed to affordability and reliability had the potential to encourage discursive regime restabilization as they defended against increasingly prominent regime-challenging storylines. In an attempt to reassert core regime logics and propagate the established trajectory, counter-narratives contributed to two delays of the phase-out target. However, disruptive storylines did not lose prominence nor did a policy reversal materialize (e.g., a decision to maintain some of the coal-fired units). *Discursive regime destabilization*, in contrast, may take place if disruptive storylines sufficiently undermine counter-narratives, leading to their decline and an associated erosion of underlying regime logics. In this fashion, increasing pressures are imposed on the established trajectory until openings are created for the pursuit of alternative directions (Rosenbloom et al., 2018). In the case of the coal phase-out, this captures the period of 2007–2014 as disruptive storylines undermined and eventually routed rival storylines. This lent force to successive choices that progressively reduced the role of coal (e.g., the sequential closure of coal units) and helped veer the configuration in alternative directions.

Beyond these more theoretical contributions, findings also offer lessons for the practice of sustainability transitions. Discursive dynamics surrounding the coal phase-out point to a number of insights for actors engaged in narrative-work. First, the narratives identified in this analysis helped to *establish compelling yet simplified understandings of complex problems*. In this way, they conveyed the essential elements without delving deeply into the multiple and stubborn factors involved in air quality issues, climate change, or the operation of the electricity system. This simplification made problems seem more tractable, opening up possible responses that were perceived as having real and immediate impacts (phasing out coal would combat smog or climate change). Second, narratives focused on coal and not all sources of air and climate pollutants, *painting a single target as the villain*. In this fashion, narratives invoked longstanding symbols (heroes, villains, and victims) and suggested concrete opportunities for action, which appealed to simplified understandings. Delegitimizing storylines, for instance, implied the elimination of all coal-fired generation rather than more complex responses (carbon capture and sequestration, for instance). Third, while the results show that several considerations shaped the pathway to eliminate coal, the discursive patterns uncovered here suggest that there is potential to *provoke accelerated action by appealing to more tangible and proximate issues* (health risks and smog, in this instance). Fourth, while the stakes may be highest during the initial framing struggles, *persistent discursive work is required to update narratives and press for the achievement of outcomes over the long-term*. Narratives did not stagnate but were rather continuously updated as contextual developments unfolded and concerns evolved, linking alternately to the incidence of smog, poor nuclear performance, economic challenges, the development of a low-carbon economy, and so on. Even now, there are lingering controversies around the coal phase-out as opponents continue to question the rationale for this initiative, asserting that air quality improvements were not achieved, climate-related motivations were misplaced, and this undertaking was the root of electricity affordability troubles in the province (McKitrick and Aliakbari, 2017). This indicates that framing struggles are never fully resolved as actors continue to reinterpret and recast complex realities to promote their perceived interests.

The study also presents some important lessons for the governance of low-carbon transitions. In particular, it suggests that regulation has an important role to play in crafting effective climate change mitigation responses. While there is currently an emphasis on carbon pricing as the optimal means of promoting low-carbon transitions, it has so far been politically untenable to adopt carbon pricing regimes that are stringent enough to encourage rapid decarbonization. In light of this, the coal phase-out experience suggests that regulatory approaches may find political and environmental success where market approaches, however well-designed, encounter unforgiving political realities. Indeed, this case demonstrates that achieving ambitious GHG emission reductions can be

politically acceptable as the Ontario Liberals won four successive mandates on their record of a coal phase-out. So, although the public may not be willing to accept an explicit carbon price at the levels needed to achieve climate objectives (the shutdown of coal units would have required a carbon price of $100–130 per tonne of CO_2), regulatory action with an equivalent but implicit price might be acceptable (Jaccard, 2016). This indicates that there may be value in promoting the accelerated elimination of particularly problematic arrangements (coal-fired generation but also internal combustion engines or inefficient construction practices) through targeted regulatory measures. This experience also links to the ongoing debate concerned with accelerating the pace of sustainability transitions (Kern and Rogge, 2016; Sovacool and Geels, 2016), stressing that deliberate and rapid shifts within complex societal systems are indeed possible and may be facilitated through regulatory approaches. Similarly, this case further corroborates the importance of incorporating *regime destabilization* or *exnovation* mechanisms such as phase-outs as part of policy mixes stimulating decarbonization pathways (Kivimaa and Kern, 2016; Kungl and Geels, 2017). It is no longer sufficient to focus on support for novel technologies or the creation of an innovation ecosystem that encourages niche development. Rather, it is critical to remove institutional supports for carbon-intensive businesses practices, terminate embedded incentives for fossil fuels, and even undermine the legitimacy of unsustainable arrangements through political discourse.

Despite the promise of Ontario's coal phase-out, its achievement may have been facilitated by a unique combination of factors that could limit its replicability across jurisdictions. First, there was no coal extraction in the province, which reduced domestic employment impacts. This differs markedly from Germany, for instance, which has historically been host to a sizeable coal industry. Second, the electricity configuration in Ontario was being restructured during the adoption and early implementation of the coal phase-out, which likely limited resistance from system actors. Third, the 2008 financial crisis dampened electricity demand considerably, lessening the task of rapidly replacing electricity capacity and ensuring reliability. Fourth, a variety of other energy-related controversies (e.g., green energy subsidies and gas plant cancellations) may have diverted attention and resources away from resisting the phase-out as actors focused on what might have been perceived as more pressing issues. Yet, while contributing factors may differ across contexts, the elimination of coal-fired power in Ontario reveals how actors can strategically leverage conjunctural forces in order to exploit openings in established trajectories and accelerate low-carbon pathways.

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